

**NCCU CLINICAL GUIDELINES**  
**SECTION: 8**

**INFECTION, SEPTIC SCREENING AND MANAGEMENT**

Section 8: Infection, septic screen and management  
Infection in the neonate  
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Neonatology Clinical Guidelines  
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## **INFECTION IN THE NEONATE**

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Bacterial infection is a leading cause of morbidity and mortality in the newborn period. Every effort must be taken to prevent, recognise (with a high level of suspicion) and treat infection. Treatment must be both specific and supportive.

Blood cultures are required prior to commencing antibiotic therapy. Cultures should be obtained from a superficial vein under clean aseptic technique. Cord blood cultures are not recommended as they have a high rate of bacterial contamination.

There are a wide range of organisms that cause infection and they can be acquired in 2 ways:

- Early onset disease (transplacental or perinatally acquired; onset <72 h of age)
- Later onset disease (postnatally acquired / nosocomial; onset >72 h of age)

### **CLINICAL PRESENTATION**

#### **1. GENERAL OR NON-SPECIFIC:**

- Hypotonia, lethargy
- Pyrexia, hypothermia, temperature instability
- Poor skin perfusion
- Poor feeding, intolerance of feeds
- Unexplained jaundice
- Metabolic acidosis
- Unstable plasma glucose homeostasis
- Apnoea and seizures
- Neutropaenia, serial counts may help to establish a trend.
- Thrombocytopenia may occur but is usually a late sign, can occur with or without disseminated intravascular coagulation.

#### **2. SUGGESTIVE OR SPECIFIC:**

- Respiratory distress
- Gastrointestinal: vomiting (may be bile-stained), diarrhoea, abdominal distension
- Central Nervous System: irritability, seizures, and full fontanel
- Skin: septic lesions
- Eyes, umbilicus: discharge

### **RISK FACTORS**

- Premature rupture of the membranes, clinical chorioamnionitis and/or discoloured liquor
- Preterm labour and birth
- Multiple gestation
- Maternal peripartum pyrexia (>38°C)
- Maternal group B Streptococcal colonisation, UTI

- Resuscitation required at birth
- Ongoing respiratory disease
- Invasive procedures and presence of catheters, cannulae, long lines, endotracheal tubes, chest drains etc.
- Colonisation with pathogens
- Nursery colonisation with pathogens
- Inadequate hand washing
- Parenteral nutrition

## CONSEQUENCES OF INFECTION

Extremely preterm infants are at high risk of mortality and significant morbidity from infection. The site of infection is an important consideration. **Isolated septicaemia** may run a fulminant course, as in Group B Streptococcal (GBS) and gram negative sepsis. Sepsis secondary to Coagulase-negative staphylococci (usually late-onset infections) tends to be less severe. Congenital **pneumonia** is usually due to GBS or gram negatives.

These neonates often require ventilation, and persistent pulmonary hypertension of the newborn (PPHN) can occur. Nosocomial pneumonia depends on the organism with which the neonate is colonised. **Meningitis** has a high (up to 50%) mortality rate in preterm infants, with survivors at risk of long-term neurological abnormalities.

## INVESTIGATION OF SUSPECTED SEPSIS

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### EARLY ONSET SEPSIS - FIRST 24 HOURS (be aware of any maternal cultures)

- Blood cultures
- Gastric aspirate (if has not fed)
- Ear swab
- Tracheal aspirate (if intubated)
- FBC, U&Es, PGL for baseline
- Consider LP
- CRP
- CXR (if indicated)

### LATER ONSET SEPSIS - BEYOND 24 HOURS

- Blood culture
- Culture of specific sites as indicated, eg trachea, skin, umbilicus
- CRP, FBC, U&Es, PGL for baseline
- CSF (Lumbar punctures should be performed in all cases of proven septicaemia)
- CXR (if indicated)
- Suprapubic urine

### CRP

- Acute phase reactant, synthesised in the liver in response to inflammatory process.
- High sensitivity & negative predictive value for both early-onset and late-onset sepsis.
- A single normal value cannot rule out infection as sampling may have preceded the CRP rise.
- Serial estimations useful – there is an increase within 4-6 hours, with a peak at 36-50 hours, remains high with ongoing infection. Quickly decreases with resolution of infection because of short half-life (4-7 hours.)

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